Name:	Date:
Topic:	Class:

Main Ideas/Questions	Notes/Examples
WARM-UP: Perfect Square Trinomials	**Factor the following trinomials:** • $x^2+8x+16$ = _____ • $x^2-18x+81$ = _____ • x^2+2x+1 = _____ • $x^2-10x+25$ = _____ These are called **perfect square trinomials**. If you have a perfect square trinomial, you can solve the quadratic equation by square roots!
EXAMPLES	**Directions:** Factor the perfect square trinomial, then solve the equation by square roots. Remember a positive number always has two square roots, so you must solve for both cases. **1.** $x^2+4x+4=25$ **2.** $x^2-12x+36=81$ **3.** $x^2-14x+49=4$ **4.** $x^2+6x+9=1$
COMPLETING THE SQUARE (when a = 1)	When you do not have a perfect square trinomial, you can create one. This process is called **completing the square**. Follow the steps below to solve the equation by completing the square.

Steps		Example
❶	Rewrite as $x^2+bx=c$	$x^2+8x+7=0$
❷	Take half of b, square it, then add this to both sides.	
❸	Factor the perfect square trinomial.	
❹	Take the square root of both sides and solve for both cases.	

© Gina Wilson (All Things Algebra®, LLC), 2012-2017

YOU TRY!

Directions: Solve each equation by completing the square.

5. $x^2 - 12x + 27 = 0$

6. $x^2 + 4x - 5 = 0$

7. $x^2 + 71 = 18x - 9$

8. $x^2 + 2x - 50 = -2$

IRRATIONAL SOLUTIONS

Directions: Solve each equation by completing the square. Simplify all irrational solutions.

9. $x^2 - 2x - 4 = 0$

10. $x^2 + 16x + 46 = 0$

11. $x^2 + 7x + 7 = 66 - x$

12. $x^2 - 2 = 6x - 3$

© Gina Wilson (All Things Algebra®, LLC), 2012-2017

Name: _____ **Unit 8:** Quadratic Equations

Date: _____ **Bell:** _____ **Homework 8:** Solving Quadratics by Completing the Square (Day 1)

**** This is a 2-page document! ****

Factor the perfect square trinomial, then solve the quadratic equation by square roots.	
1. $x^2 + 18x + 81 = 1$	**2.** $x^2 - 10x + 25 = 64$
3. $x^2 - 16x + 64 = 4$	**4.** $x^2 + 2x + 1 = 49$
Solve each quadratic equation by completing the square. Simplify all irrational solutions.	
5. $x^2 - 6x - 16 = 0$	**6.** $x^2 - 20x + 19 = 0$
7. $x^2 + 4x + 14 = 46$	**8.** $x^2 + 14x + 32 = -8$

© Gina Wilson (All Things Algebra®, LLC), 2012-2017

9. $x^2 + 41 = 12x + 9$	**10.** $x^2 + 8x - 12 = 21$
11. $x^2 - x - 22 = x - 7$	**12.** $x^2 + 10x + 39 = 23$
13. $x^2 - 16x + 74 = 2x$	**14.** $x^2 = 8x - 4$
15. $x^2 - 4x - 7 = 21$	**16.** $x^2 + 12 = 38 - 16x$

© Gina Wilson (All Things Algebra®, LLC), 2012-2017